

What is claimed is:

1. A golf ball comprising:  
a solid center having a deflection, under an applied static load of 200 lb., of between about 0.090 inches and about 0.150 inches;  
at least one intermediate layer comprised of thermoplastic material; and  
a cover layer comprising an ionomer or ionomer blend and having a Shore D hardness, measured on the curved surface of the golf ball, of greater than about 70;  
wherein, the golf ball, when struck by a driver club at a clubhead velocity of about 160 feet-per-second, has an initial velocity off the clubhead of greater than about 240 feet-per-second.
2. The golf ball of claim 1, where the golf ball has a coefficient of restitution of greater than about 0.812 at a test velocity of 150 feet-per-second.
3. The golf ball of claim 1, wherein the center has a diameter of less than about 1.25 inches.
4. The golf ball of claim 1, wherein the center has a diameter of less than about 1.125 inches.
5. The golf ball of claim 1, wherein the at least one intermediate layer(s) has a Shore D hardness as measured on the curved outer surface of the at least one intermediate layer, of between about 55 and about 62.
6. The golf ball of claim 1, wherein the at least one intermediate layer comprises a copolymer of ethylene and acrylic acid, wherein about 100% of the acid groups are neutralized with metal ions.
7. The golf ball of claim 6, wherein the at least one intermediate layer further comprises greater than about 5 parts per hundred of a fatty acid salt chosen from the group consisting of magnesium stearate and magnesium oleate.

8. The golf ball of claim 1, wherein the at least one intermediate layer comprises a terpolymer of ethylene, acrylic acid, and n-butyl acrylate, wherein about 100% of the acid groups are neutralized with metal ions.

9. The golf ball of claim 8, wherein the at least one intermediate layer further comprises greater than about 5 parts per hundred of a fatty acid salt chosen from the group consisting of magnesium stearate and magnesium oleate.

10. The golf ball of claim 1, wherein the ball has a diameter of about 1.680 in.

11. The golf ball of claim 1, wherein the core, the at least one intermediate layer, and the cover layer have approximately the same specific gravity.

12. The golf ball of claim 11, wherein the specific gravity of the core, the at least one intermediate layer, and the cover layer is between about 1.115 and about 1.135.

13. The golf ball of claim 1, wherein the ball has a diameter of about 1.650 in.

14. The golf ball of claim 13, wherein the specific gravity of all components is between about 1.175 and about 1.195.

15. The golf ball of claim 1, wherein the ball has a diameter of about 1.620 in.

16. The golf ball of claim 15, wherein the core, the at least one intermediate layer, and the cover layer have approximately the same specific gravity.

17. The golf ball of claim 16, wherein the specific gravity of all components is between about 1.230 and about 1.270.

18. The golf ball of claim 1, wherein the core is adjusted to a desired specific gravity through use of an inert filler.

19. The golf ball of claim 18, wherein the inert filler is chosen from the groups consisting of organic and inorganic materials.

20. The golf ball of claim 19, wherein the inorganic materials are chosen from the groups consisting of metals, metal oxides, metal sulfates, and combinations thereof.
21. The golf ball of claim 1, wherein the at least one intermediate layer is adjusted to a desired specific gravity through use of an inert filler.
22. The golf ball of claim 21, wherein the inert filler is chosen from the groups consisting of organic and inorganic materials.
23. The golf ball of claim 22, wherein the inorganic materials are chosen from the groups consisting of metals, metal oxides, metal sulfates, and combinations thereof.
24. The golf ball of claim 1, wherein the cover layer is adjusted to a desired specific gravity through use of an inert filler.
25. The golf ball of claim 24, wherein the inert filler is chosen from the groups consisting of organic and inorganic materials.
26. The golf ball of claim 25, wherein the inorganic materials are chosen from the groups consisting of metals, metal oxides, metal sulfates, and combinations thereof.
27. The golf ball of claim 1, wherein the golf ball, when rotated in a solution of salt water of sufficient density to support the ball, exhibits no single preferred orientation.
28. A golf ball comprising:
  - a core comprising a polybutadiene;
  - a mantle comprising a thermoplastic material; and
  - a cover layer comprising an ionomer;wherein the golf ball exhibits a coefficient of restitution of greater than about 0.77 when struck by a driver club at a club head speed of 175 feet-per-second.
29. The golf ball of claim 28, wherein the golf ball, when struck by a driver club at a clubhead velocity of about 160 ft/s, has an initial velocity off the clubhead of greater than about 238 ft/s.

30. The golf ball of claim 28, wherein the polybutadiene comprise a high cis-1,4 content polybutadiene and the core further comprises about 20 to about 28 parts by weight of a co-crosslinking agent comprised primarily of a zinc salt of an unsaturated acrylate, about 3 to about 5 parts by weight of a metal oxide activator, and about 0.8 to about 1.5 parts per hundred resin of a free radical initiator.

31. The golf ball of claim 28, wherein the core has a diameter of less than about 1.25.

32. The golf ball of claim 28, wherein the thermoplastic material comprises about 70 to about 80% ethylene, about 8 to about 10.5% acrylic acid and about 12 to about 20% n-butyl acrylate.

33. The golf ball of claim 28, wherein the core, the mantle, and the cover layer have approximately the same specific gravity.

34. The golf ball of Claim 33, wherein the specific gravity of the core, the at least one intermediate layer, and the cover layer is between about 1.115 and about 1.135.

35. The golf ball of Claim 28, wherein the ball, when rotated in a solution of salt water of sufficient density to support the ball, exhibits no single preferred orientation.

36. The golf ball of claim 28, wherein the ball has a diameter of about 1.680 in.

37. The golf ball of claim 28, wherein the ball has a diameter of about 1.650 in.

38. The golf ball of claim 37, wherein the specific gravity of all components is between about 1.175 and about 1.195.

39. The golf ball of claim 28, wherein the ball has a diameter of about 1.620 in.

40. The golf ball of claim 39, wherein the specific gravity of all components is between about 1.230 and about 1.270.

41. The golf ball of claim 28, wherein the core is adjusted to a desired specific gravity through use of an inert filler.

42. The golf ball of claim 41, wherein the inorganic materials are chosen from the groups consisting of metals, metal oxides, metal sulfates, and combinations thereof.

43. The golf ball of claim 28, wherein the mantle is adjusted to a desired specific gravity through use of an inert filler.

44. The golf ball of claim 43, wherein the inorganic materials are chosen from the groups consisting of metals, metal oxides, metal sulfates, and combinations thereof.

45. The golf ball of claim 28, wherein the cover layer is adjusted to a desired specific gravity through use of an inert filler.

46. The golf ball of claim 45, wherein the inorganic materials are chosen from the groups consisting of metals, metal oxides, metal sulfates, and combinations thereof.

47. A golf ball comprising:  
a center;  
a mantle; and  
a cover layer, the center, the mantle, and the cover layer all having a specific gravity that is substantially identical;  
wherein, the golf ball, when struck by a driver club at a clubhead velocity of about 160 feet-per-second, has an initial velocity off the clubhead of greater than about 240 feet-per-second.

48. The golf ball of claim 47, where the golf ball has a coefficient of restitution of greater than about 0.812 at a test velocity of about 150 feet-per-second.

49. The golf ball of claim 47, wherein the center has a diameter of less than about 1.25 inches.

50. The golf ball of claim 47, wherein the center has a diameter of less than about 1.125 inches.

51. The golf ball of claim 47, wherein the at least one intermediate layer(s) has a Shore D hardness as measured on the curved outer surface of the mantle, of between about 55 and about 62.

52. The golf ball of claim 47, wherein the mantle comprises a copolymer of ethylene and acrylic acid, wherein about 100% of the acid groups are neutralized with metal ions.

53. The golf ball of claim 52, wherein the at least one intermediate layer further comprises greater than about 5 parts per hundred of a fatty acid salt chosen from the group consisting of magnesium stearate and magnesium oleate.

54. The golf ball of claim 47, wherein the mantle comprises a terpolymer of ethylene, acrylic acid, and n-butyl acrylate, wherein about 100% of the acid groups are neutralized with metal ions.

55. The golf ball of claim 54, wherein the mantle further comprises greater than 5 parts per hundred of a fatty acid salt chosen from the group consisting of magnesium stearate and magnesium oleate.

56. The golf ball of claim 47, wherein the golf ball, when rotated in a solution of salt water of sufficient density to support the ball, exhibits no single preferred orientation.